EPA/MEW
Sewer Pathway Meeting

January 25, 2021

Agenda

- Introductions
- EPA Presentation: Sewer Pathway information along Fairchild Drive Main and Laterals
- EPA 2020 Assessment - Potential Impacts and Mitigation Measures
- Next Steps
- Q&A

Background Overview

- EPA Sewer Pathway Assessment Work
- Sewer information along Fairchild Drive and Laterals
- May 6, 2014 EPA All Parties meeting sewer pathway information
- June 29, 2020 EPA/MEW – Waverly - 277 Fairchild sewer pathway information


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F5-036
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F6-003
F6-012
F6-019
F6-023
F5-019
F5-023
F6-085
F6-013
MH2
F5-021
F5-027
F6-001
F6-015
F6-113
MH3
F6-021
F6-025
F5-025
F5-029
F6-011
MH5
F6-027
F5-035
F5-033
F6-009
Evandale Ave
MH4
F6-029
F5-100
F6-059
Fairchild Dr
F5-031
F6-041
F6-049
F6-017
F5-102
F5-037
F5-033
F6-053
F6-031
F5-059
F5-061
F5-065
F6-033
F5-063
F6-107
F5-139
Piazza Dr
F6-061
North Whisman Rd
101
F6-071
Devonshire Ave
F6-035
F5-093
F6-063
F6-065
F6-067
F7-002
F5-095
F6-073
F6-075
F6-055
National Ave
F5-097
F6-069
F6-037
Easy St
F5-111
F5-073
F6-079
F6-039
F6-039
F6-077
Murlagan Ave
F6-057
F5-077
Tyrella Ave
G5-024
F6-081
G6-002
G6-004
G5-022
G6-018
G5-034
G6-014
G5-036
G6-006
G5-030
Walker Dr
G6-010
G6-020
Ellis St
G6-022
G6-012
G6-024
G6-016
G6-044
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G6-030
G6-043
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G6-032
G6-038
G7-022
G6-038
G6-036
G6-034
G6-019
0
200
400
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Feet
Legend
TCE in Shallow Groundwater > 5 µg/L
Estimated
Approximate*
Street Sewer Manhole
Sewer Main
* Further groundwater investigation is ongoing (2019-2021) to delineate the TCE groundwater plume boundary.
µg/L - micrograms per liter
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Updated Information Reviewed

- Coordination with City of Mountain View – GIS, sewer lines, video inspection logs

- Fairchild sewer gas main and lateral samples (manhole and sewer cleanouts)

- Current permitted industrial wastewater dischargers
  - NEC/Renesas 501 Ellis (2018-2020 PRCCs)
    Groundwater extraction effluent discharge: 5.3 – 8.6 gpm
    TCE: 53- 69 μg/L; cis-1,2-DCE: 21-26 μg/L

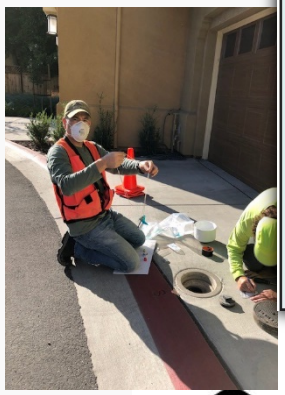
PRCC = Periodic Report of Continued Compliance

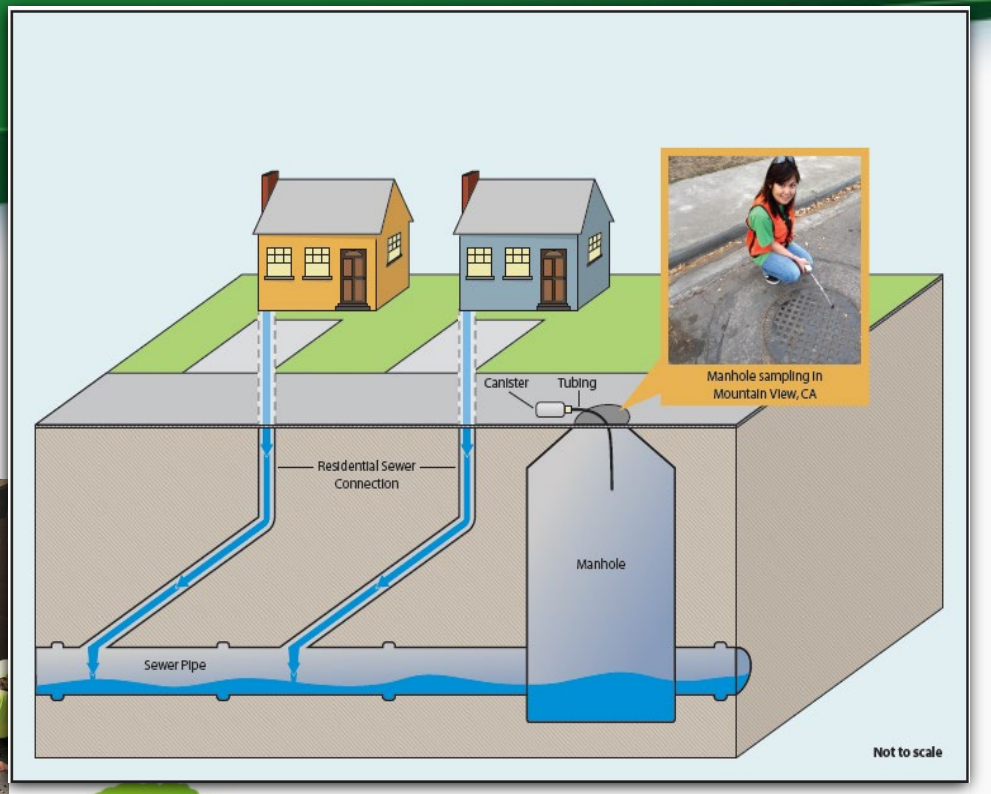
Investigating Sewer Pathway

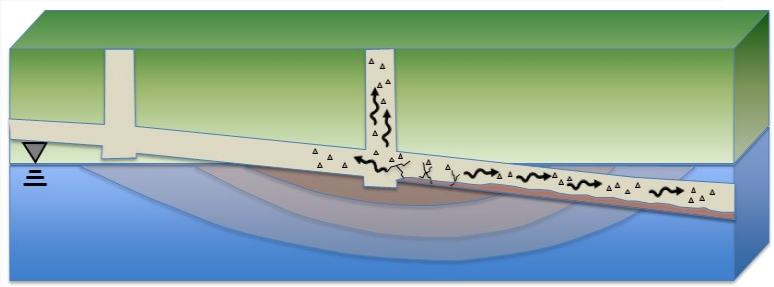
Disposal of TCE in Sewer
- Permitted, non-permitted discharges

Infiltration of shallow groundwater contamination
where sewer/utility tunnel intercepts

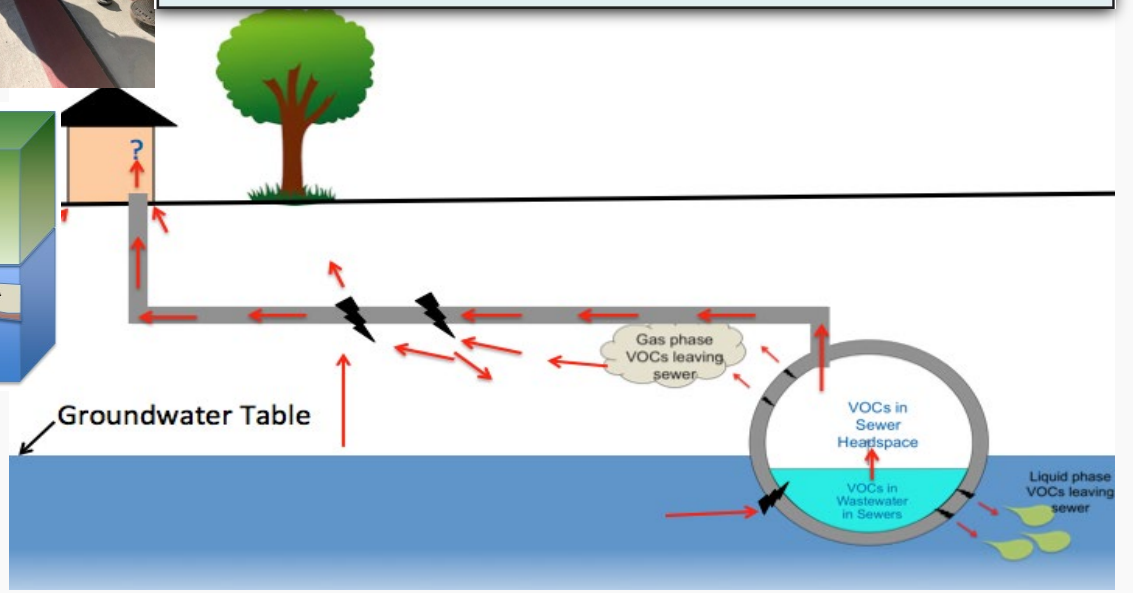
Sampling
- Manhole sewer gas, sewage
- Sewer cleanout







(Source: McHugh and Beckley, 2015)



Source: Kelly Pennell, UKY, 2016)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MH4
F6-019
F6-023
F6-021
F6-025
F6-027
F6-029
Fairchild Dr
F6-031
F6-033
F6-035
F7-002
F6-055
F6-037
F6-039
F6-053
F6-069
F6-057
G6-014
G6-010
G6-012
G6-016
501 Ellis St.
G6-040
G6-019
Evandale Ave
Tyrella Ave
Piazza Dr
Devonshire Ave
North Whisman Rd
National Ave
Ellis St
Murlagan Ave
Walker Dr
101
0
200
400
800
Feet
Legend
TCE Maximum Concentrations in Manhole Sewer Air, May-December 2020, µg/m3
TCE Not Detected
>ND - 100
>100 - 500
>500 - 1000
>1000
TCE in Shallow Groundwater > 5 µg/L
Estimated
Approximate*
Street Sewer Manhole
Sewer Main
NEC/Renesas 501 Ellis discharge point
* Further groundwater investigation is ongoing (2019-2021) to delineate the TCE groundwater plume boundary.
µg/L - micrograms per liter
µg/m3 - micrograms per cubic meter
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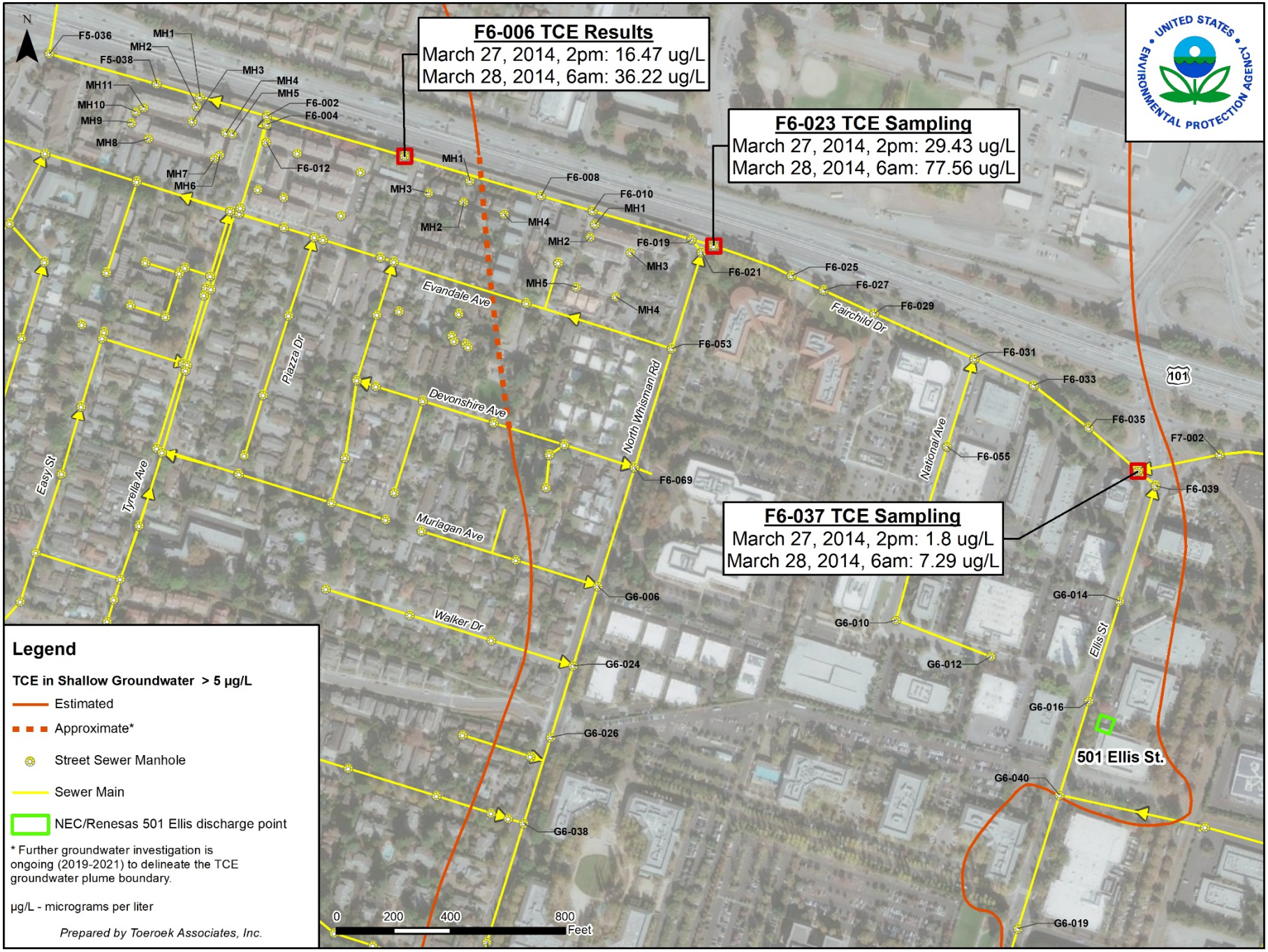
F6-006 TCE Results
March 27, 2014, 2pm: 16.47 ug/L
March 28, 2014, 6am: 36.22 ug/L
F6-023 TCE Sampling
March 27, 2014, 2pm: 29.43 ug/L
March 28, 2014, 6am: 77.56 ug/L
F6-037 TCE Sampling
March 27, 2014, 2pm: 1.8 ug/L
March 28, 2014, 6am: 7.29 ug/L
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
N
Evandale Ave
Devonshire Ave
Murlagan Ave
Walker Dr
Fairchild Dr
Plazza Dr
Tyrella Ave
Easy St
North Whisman Rd
National Ave
Ellis St
101
501 Ellis St.
0 200 400 800 Feet
Legend
TCE in Shallow Groundwater > 5 µg/L
Estimated
Approximate*
Street Sewer Manhole
Sewer Main
NEC/Renesas 501 Ellis discharge point
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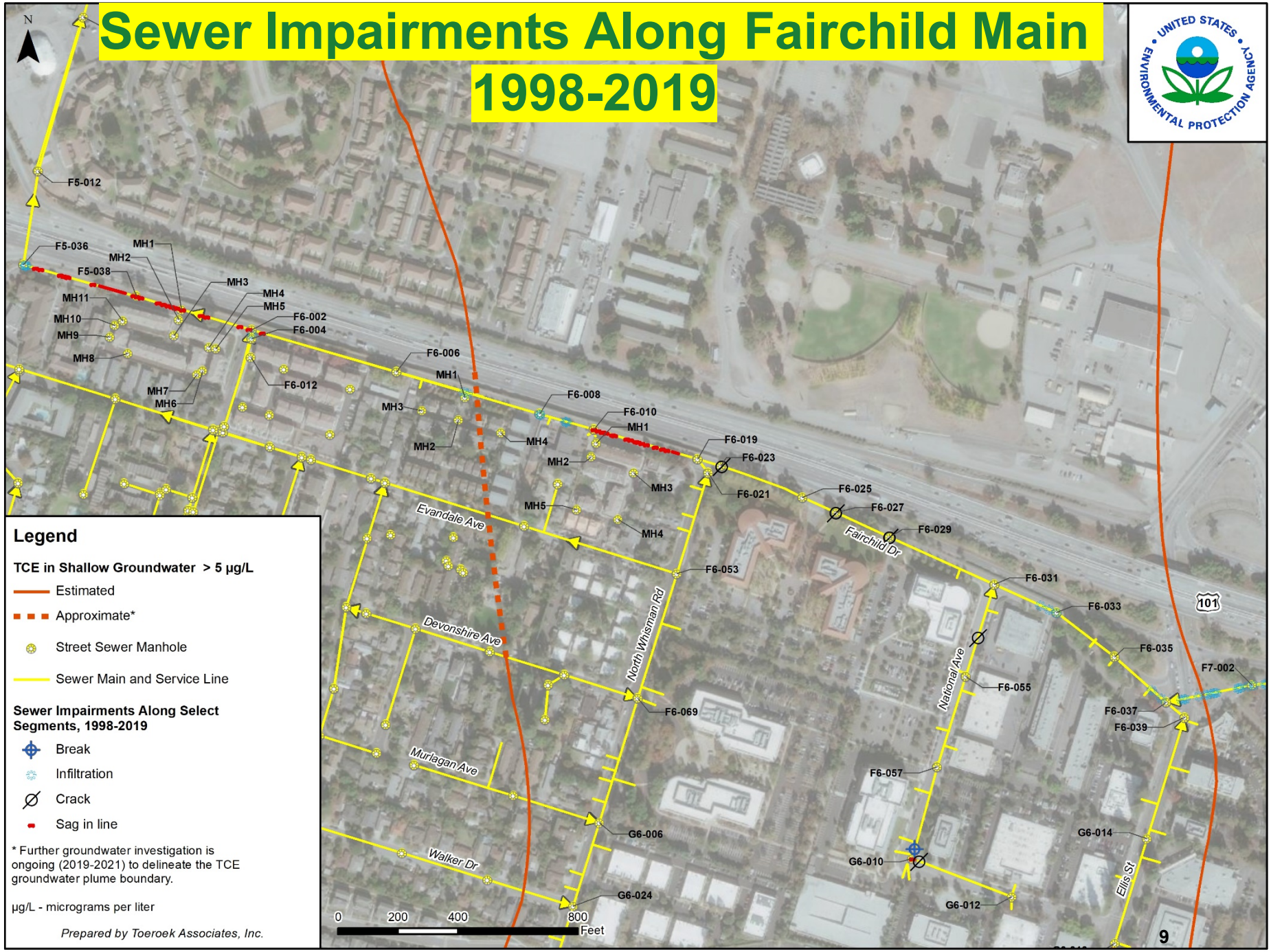
Sewer Impairments Along Fairchild Main 1998-2019



Legend

TCE in Shallow Groundwater > 5 µg/L

- Estimated
- Approximate*
- Street Sewer Manhole
- Sewer Main and Service Line

Sewer Impairments Along Select Segments, 1998-2019

- Break
- Infiltration
- Crack
- Sag in line

* Further groundwater investigation is ongoing (2019-2021) to delineate the TCE groundwater plume boundary.

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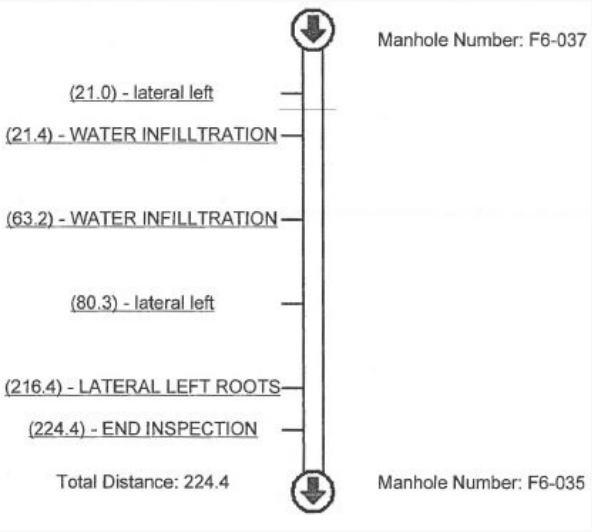
Example: Sewer impairment segments

Example video: F6-037 to F6-035



Example: F7-002 to F6-037

Manhole Number: F7-002

(13.3) - WATER INFILTRATION

(38.9) - WATER INFILTRATION

(44.0) - WATER INFILTRATION

(48.9) - WATER INFILTRATION

(120.9) - WATER INFILTRATION

(125.3) - WATER INFILTRATION

(129.7) - WATER INFILTRATION

(140.8) - WATER INFILTRATION

(141.7) - lateral LEFT GREASE

(154.4) - WATER INFILTRATION

(160.4) - WATER INFILTRATION

(181.0) - WATER INFILTRATION

(226.9) - WATER INFILTRATION

(230.7) - WATER INFILTRATION

(241.5) - WATER INFILTRATION

(294.7) - END INSPECTION

Total Distance: 294.7

Manhole Number: F6-037

Nearby TCE Shallow A-zone Groundwater Results

Legend

- TCE - Trichloroethene
- Vapor Intrusion Study Area - estimated TCE in shallow groundwater > 5 parts per billion (ppb)
- Groundwater Monitoring Well (Sampled in 2018) The result shown is the TCE concentration in ppb from groundwater monitoring well samples collected in 2018. ND = Not Detected (below 0.5 ppb TCE)
- 89A / 92 — Well Identification / TCE Concentration
- 2014 Groundwater Grab Sample
- 2012 Groundwater Grab Sample

The result shown is the maximum TCE concentration in ppb to 40 feet below ground surface

- Planned developments with vapor intrusion control systems (not yet built)
- Buildings built with vapor intrusion control systems
- Wescoat Village Residential Area buildings with vapor intrusion control systems (2006)
- Proposed Development Area
- Slurry Wall (Underground)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F5-036
MH1
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F5-038
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MH11
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F6-006
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F6-008
F6-010
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EPA Sewer Gas Results - 2020

- Fairchild Sewer Main and Lateral

- Residential Developments Connected to Fairchild Sewer Main
  - Waverly
  - 235 Fairchild Apartments
  - Classics
  - 6Sixty


N
F5-036
22.76
F5-038
19.88
MH2
13.56
MH3
9.4
MH1
18.5
MH4
8.79
MH5
6.0
F6-002
18.45
F6-004
12.72
MH11
7.33
MH10
7.42
MH9
7.16
MH8
7.21
MH7
7.56
MH6
7.53
Cinnamon Circle
6Sixty
F6-012
12.63
Sonoma Terrace
Viewpoint
F6-006
17.35
MH1
11.52
MH2
11.2
MH3
3.61
177
Wiley Terrace
MH4
3.53
Classics
F6-008
16.87
F6-010
17.72
MH1
7.64
F6-019
16.87
F6-023
16.06
235
211
MH2
7.6
F6-021
12.98
MH3
6.1
MH5
Ariana Place
MH4
Waverly
Evandale Ave
F6-053
11.75
F6-069
9.78
Perimeter Rd
Wescoat Ct
Bailey Rd
Dailey Rd
Piazza Dr
Devonshire Ct
Annie Laurie St
Dorchester Dr
Lambert Way
N Whisman Rd
Devonshire Ave
Murlagan Ave
0
125
250
500
Feet
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Legend
TCE Maximum Concentrations in Manhole Sewer Air, May-December 2020, µg/m3
TCE Not Detected
>ND - 100
>100 - 500
>500 - 1000
>1000
Development Area
County Parcel
Street Sewer Manhole
Manhole ID F5-036
Invert depth in feet 22.76
Sewer Main and Service Line
µg/m3 - micrograms per cubic meter
Prepared by Toeroek Associates, Inc.


N
Fairchild Dr
F6-006
17.35
101
MH1
11.52
177
MH3
3.61
MH2
11.2
Wiley Terrace
MH4
3.53
F6-008
16.87
F6-010
17.72
235
MH1
7.64
211
MH2
7.6
Classics
Evandale Ave
0
25
50
100
Feet
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Legend
TCE Maximum Concentrations in Manhole Sewer Air, May-December 2020, µg/m3
TCE Not Detected
>ND - 100
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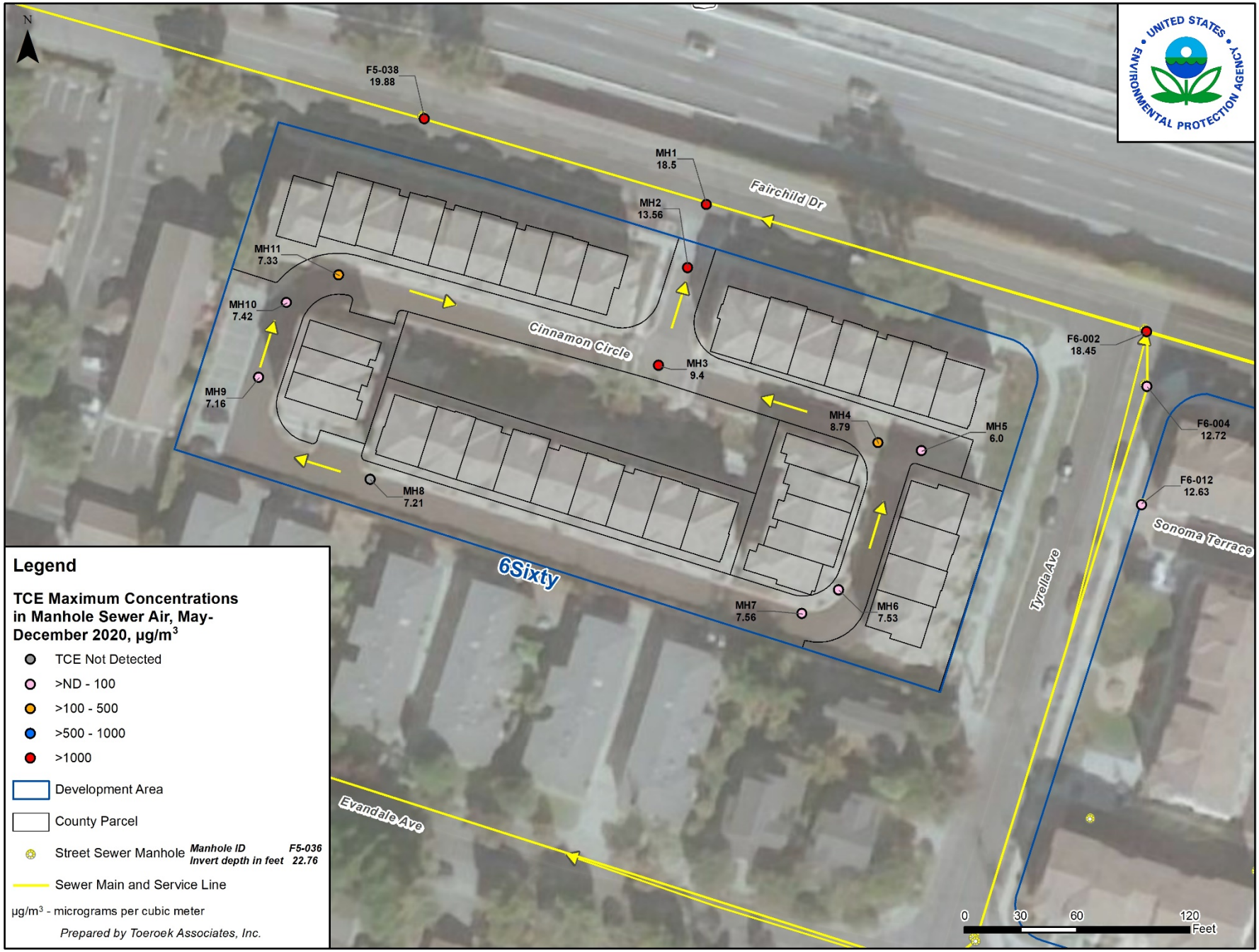
>500 - 1000
>1000
Development Area
County Parcel
Street Sewer Manhole
Manhole ID F5-036
Invert depth in feet 22.76
Sewer Main and Service Line
µg/m3 - micrograms per cubic meter
Prepared by Toeroek Associates, Inc.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F5-038
19.88
MH1
18.5
Fairchild Dr
MH2
13.56
MH11
7.33
MH10
7.42
Cinnamon Circle
MH3
9.4
MH9
7.16
MH4
8.79
MH5
6.0
MH8
7.21
6Sixty
MH7
7.56
MH6
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F6-002
18.45
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Sonoma Terrace
Tyrella Ave
Evandale Ave
0
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60
120
Feet
Legend
TCE Maximum Concentrations in Manhole Sewer Air, May-December 2020, µg/m3
TCE Not Detected
>ND - 100
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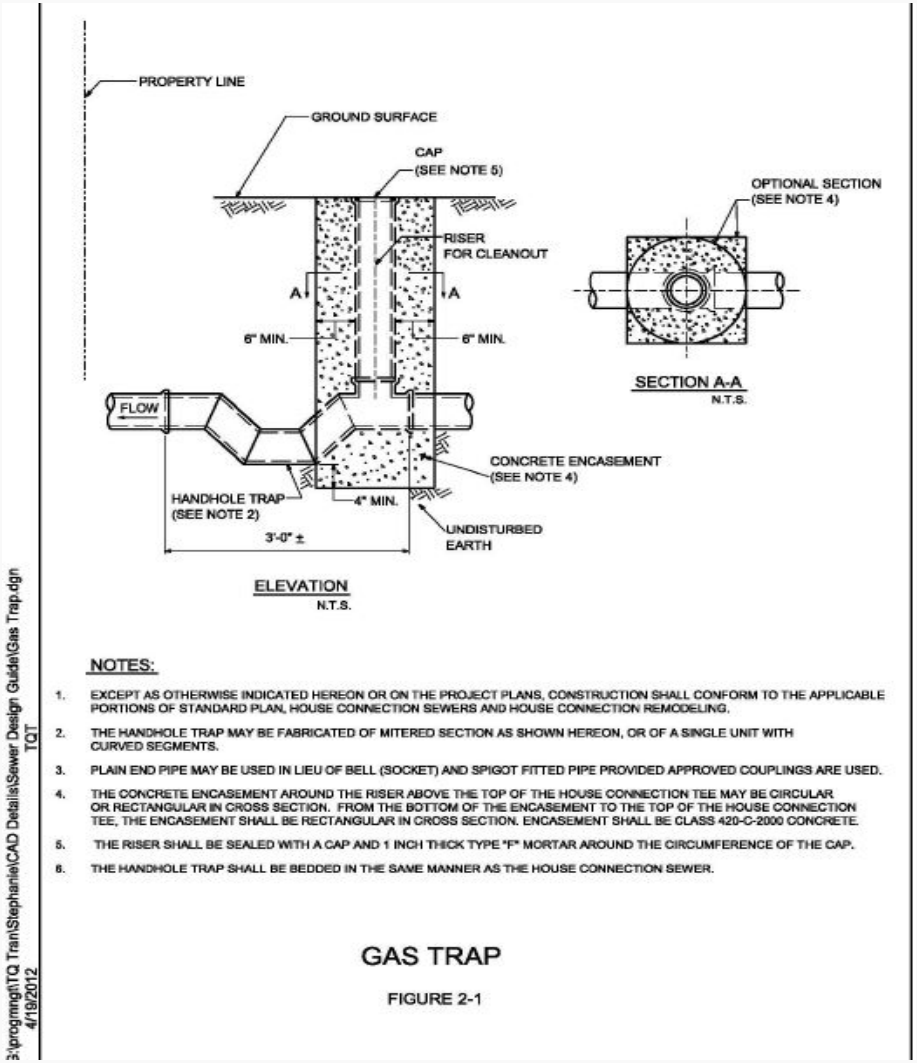
Development Area
County Parcel
Street Sewer Manhole
Manhole ID F5-036
Invert depth in feet 22.76
Sewer Main and Service Line
µg/m3 - micrograms per cubic meter
Prepared by Toeroek Associates, Inc.

Potential Impacts

- Residential Developments Connected to Fairchild Sewer Main
  - Waverly (Mitigation measure implemented – 11/30/20)
  - 235 Fairchild Apartments
  - 211 Fairchild (215/217 under construction)
  - Classics
  - 6Sixty

Recommended Mitigation Measures

- Gas trap / siphon
  - Classics
  - 6Sixty
  - 211 Fairchild (215/217)
  - 235 Fairchild



Recommended Mitigation Measures

- 501 Ellis Street facility - carbon treatment of groundwater extraction prior to discharge

Next Steps

- Residential Developments Connected to Fairchild Sewer Main
- Implement Mitigation Measures - Residential
- Additional Sewer Pathway Assessment -
- Commercial Area with connections to Fairchild main - Redevelopment
- EPA Focused FS to include Sewer Pathway

Questions


Legend
TCE Maximum Concentrations in Manhole Sewer Air, May-December 2020, µg/m³
TCE Not Detected
>ND - 100
>100 - 500
>500 - 1000
>1000
Development Area
County Parcel
Street Sewer Manhole
Sewer Main and Service Line
µg/m³ - micrograms per cubic meter
Prepared by Toeroek Associates, Inc.
Perimeter Rd
Wescott Ct
Bailey Rd
Cinnamon Circle
6Sixty
Sonoma Terrace
Viewpoint
Willoy Terrace
Classics
Evandale Ave
Waverly
Ariana Place
Plaza Dr
Devonshire Ct
Annie Laurie St
Dorchester Dr
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Lambert Way
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F5-036
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